

PATENT SPECIFICATION



Application Date: April 13, 1928. No. 10,935 / 28.

310,175

Complete Left: Dec. 5, 1928.

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PROVISIONAL SPECIFICATION.

Improvements in Sliding Windows for Vehicles.

We, H. M. HOBSON LIMITED, a Company organised under the laws of Great Britain, of 47—55, Acton Vale, London, W. 3, and HERBERT HARDING, of 19, Atherton Road, Forest Gate, London, E. 7, a British Subject, do hereby declare the nature of this invention to be as follows:—

This invention relates to sliding windows for vehicles of the type in which the window when raised closes the window opening and when lowered is contained within the lower part of the vehicle door or in the wall of the vehicle body. The purpose of the invention is to permit of the formation of an aperture in the base of the window sufficient for passing the hand through such aperture without the necessity of opening the upper portion of the said window. The invention therefore relates to means for operating the window whereby the complete window opening may be uncovered or the lower portion of the window only be uncovered, the selection of these two adjustments being made by the driver or occupant of the vehicle.

Windows have already been made for vehicles in which a section of the window has been hinged to open outwards and permit of the driver extending his hand for signalling purposes. Windows have also been divided into upper and lower sections such sections being carried in a sash which may be raised and lowered up and down bodily with the two sections of the glass forming the window close up to each other and which permits of the separation of the two sections of glass within the movable sash so as to enable the lower section of the window to be separated from the upper section during the closed position in order to open a space below the upper section. Such an arrangement, however, does not permit of a window opening being formed of approximately half the full height of the door because the movable sash must necessarily be of greater height than the combined height of the upper and lower sections of the window and thus additional height must be provided for in the depth of the pocket formed in the lower

half of the door for the reception of the sliding sash.

The object of the present invention is to provide a window in which upper and lower sections may be separated by the lowering of the lower section when the upper section is at its maximum height and to effect this while permitting the window opening to be nearly half the full height of the door, and further, to enable the upper and lower glass forming the windows to be slidden directly in stationary slides in the door or window-frame without requiring a sliding sash within which the lower portion of the window may be slidden relatively to the upper portion. The invention further relates to means for operating the two window sections whereby by the operation of a single part within the vehicle the upper and lower sections may be raised to the full height, with their adjacent edges contacting or they may be separated and the lower section first lowered to be followed by the continued movement of the operating part causing the upper section of the window to follow the downward section into the recess and overtake it at the bottom of the pocket until the said upper section is completely encased.

According to this invention the upper section of the window is guided inside guides in the door frame or other frame to which the window is fitted, and in the same guides a lower section is similarly received and guided in such a manner that the two sections may be carried upwards in contact with each other until they completely close the window opening or they may be separated in order to open a space below the upper section, or they may be lowered so as to open the upper portion of the window opening or completely to open such window opening when the two sections are in their lowest positions. The means employed for operating the sections may comprise chain or arm mechanism operated by a handle within the vehicle, the upper and lower sections being connected to such mechanism by lost motion connections which provide for a lost motion occurring in the adjustment of the section at the particu-

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Price 1/-

lar period required in the cycle of operations of the adjustment mechanism. For instance, both upper and lower sections may be in operative connection with the adjusting mechanism during the commencement of the upward movement and remain in such operative connection until the upper section arrives at the uppermost limit of its travel. The continued movement of the operating mechanism may then be used for lowering the lower section while leaving the upper section in position. Alternatively, the mechanism may first operate the upper section until the upper and lower sections are separated to the suitable gap distance apart and then the lower section may take up the operative movement and both upper and lower sections then travel upwards until the top section arrives at the uppermost position while the continued movement of the mechanism continues to raise the lower section until the whole window opening is closed.

This movement may be effected by means of a continuous chain having engagement studs operating horizontal slides below the sections of the window or by means of arms operated by a gear disc which by means of segmental slots and pin permits one arm to move in angular relation to the other arm and thus operate the slides of the two sections of the window to different degrees until the upper sections is in its uppermost position when the lower section is continued in its upward movement until it contacts with the lower edge of the upper section by reason of the continued movement of the arm

operating the lower section.

The invention above described, provides sliding windows for vehicles comprising upper and lower sections, in which the two sections slide vertically in the same stationary side guides and in which both sections are in close proximity when the lower section is at the base of the pocket and the window completely open, in combination with mechanism operable from within the vehicle and by which both sections may be operated simultaneously, and permit the said sections to separate to open a space below the upper section when the said upper section is in its uppermost position. It also provides windows in which the two sections are operated by a single operating mechanism from within the vehicle, and which provides a lost motion permitting the upper section to come to rest in its uppermost position while the lower section is caused to continue its upward movement to close the gap between the two sections. It further includes sliding windows for vehicles in which a single operating mechanism causes both sections to be raised while in contact with each other, and which then by the continued operation or reversing of the said mechanism permits the lower section to be lowered so as to separate the two sections in such a manner as to open a gap in the lower part of the window opening.

Dated this 13th day of April, 1928.

BREWER & SON,
33, Chancery Lane, London,
Patent Agents for the Applicants.

COMPLETE SPECIFICATION.

Improvements in Sliding Windows for Vehicles.

We, H. M. HOBSON LIMITED, a Company organised under the laws of Great Britain, of 47—55, Acton Vale, London, W. 3, and HERBERT HARDING, of 19, Atherton Road, Forest Gate, London, E. 7, a British Subject, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to vertically sliding windows for vehicles of the type in which the window when raised closes the window opening and when lowered is contained within the lower part of the vehicle door or in the wall of the vehicle body. The purpose of the invention is to permit of the formation of an aperture in the base of the window sufficient for

passing the hand through such aperture without the necessity of opening the upper portion of the said window. The invention therefore relates to means for operating the window whereby the complete window opening may be uncovered or the lower portion of the window only be uncovered, the selection of these two adjustments being made by the driver or occupant of the vehicle.

Windows have already been made for vehicles in which a section of the window has been hinged to open outwards and permit of the driver extending his hand for signalling purposes. Windows have also been divided into upper and lower sections such sections being carried in a sash which may be raised and lowered up and down bodily with the two sections of

the glass forming the window close up to each other and which permits of the separation of the two sections of glass within the movable sash so as to enable the lower section of the window to be separated from the upper section during the closed position in order to open a space below the upper section. Such an arrangement, however, does not permit of a window opening being formed of approximately half the full height of the door because the movable sash must necessarily be of greater height than the combined height of the upper and lower sections of the window and thus additional height must be provided for in the depth of the pocket formed in the lower half of the door for the reception of the sliding sash.

The object of the present invention is to provide a window in which upper and lower sections may be separated by the lowering of the lower section when the upper section is at its maximum height and to effect this while permitting the window opening to be nearly half the full height of the door, and further, to enable the upper and lower glass forming the windows to be slidden directly in stationary slides in the door or window-frame without requiring a sliding sash within which the lower portion of the window may be slidden relatively to the upper portion. The invention further relates to means for operating the two window sections whereby by the operation of a single part within the vehicle the upper and lower sections may be raised to the full height, with their adjacent edges contacting or they may be separated and the lower section first lowered to be followed by the continued movement of the operating part causing the upper section of the window to follow the downward section into the recess and overtake it at the bottom of the pocket until the said upper section is completely encased.

According to this invention the upper section of the window is guided in side guides in the door frame or other frame to which the window is fitted, and in the same guides a lower section is similarly received and guided in such a manner that the two sections may be carried upwards in contact with each other until they completely close the window opening and they may be separated in order to open a space below the upper section, or they may be lowered so as to open the upper portion of the window opening or completely to open such window opening when the two sections are in their lowest positions. The means employed for operating the sections may comprise chain

or arm mechanism operated by a handle within the vehicle, the upper and lower sections being connected to such mechanism by lost motion connections which provide for a lost motion occurring in the adjustment of the section at the particular period required in the cycle of operations of the adjustment mechanism. For instance, both upper and lower sections may be in operative connection with the adjusting mechanism during the commencement of the upward movement and remain in such operative connection until the upper section arrives at the uppermost limit of its travel. The continued movement of the operating mechanism may then be used for lowering the lower section while leaving the upper section in position. Alternatively, the mechanism may first operate the upper section until the upper and lower sections are separated to the suitable gap distance apart and then the lower section may take up the operative movement and both upper and lower sections then travel upwards until the top section arrives at the uppermost position while the continued movement of the mechanism continues to raise the lower section until the whole window opening is closed.

This movement may be effected by means of a continuous chain having engagement studs operating in horizontal slides below the sections of the window or by means of arms operated by a gear disc which by means of segmental slots and pin permits one arm to move in angular relation to the other arm and thus operate the slides of the two sections of the window to different degrees until the upper section is in its uppermost position when the lower section is continued in its upward movement until it contacts with the lower edge of the upper section by reason of the continued movement of the arm operating the lower section.

In order that this invention may be clearly understood reference is made to the accompanying drawings, in which:—

Figs. 1 and 2 are respectively diagrammatic front elevation and cross section of a two part sliding window, in which the upper and lower sections are both operated by studs carried on a continuous chain and in which the upper and lower sections are both shown in the upper position with the window completely closed. Fig. 3 is a similar front view, but with the lower section of the window lowered.

Fig. 4 is a diagrammatic front elevation of a two part window, which is operated by an arm mechanism, and in which the lower section is in contact with the upper section in its uppermost position. Fig. 5 is a similar view showing the com-

mencement of the downward movement of the operating arm and showing the gap between the two sections in the open position.

5 Fig. 6 is a diagrammatic front view showing the two sections operated by arm mechanism, but so arranged that both sections rise to the uppermost point and are then separated by a continued move-
10 ment of the arm mechanism.

Fig. 7 is a cross section of the same apparatus and Fig. 8 is a front view showing the gap opened between the two sections by the continued movement of the arm operating mechanism.

15 In the drawings, A is the upper section of the window and B the lower section. As will be seen in Figs. 2 and 7 both of these sections A and B slide vertically in the same vertical plane. The guides
20 guiding these sections A and B are contained in the door-frame or other frame to which the window is fitted and may be of the usual form.

25 C is a continuous chain having engagement studs D and E. The stud D engages a horizontal slide F which is contained in an attachment F¹, connected to the upper section A. G is a horizontal
30 slide in which the engagement stud E slides, and the said slide G is contained in an attachment G¹, which is connected to the lower section B of the window.

H, is a driving handle for driving a
35 pinion H¹, which through a further pinion H² drives the chain for raising and lowering the window sections. By turning the handle H the chain C is driven, if the pinion H¹ is driven to the
40 right and therefore communicates rotation to the pinion H² in the direction to the left. The engagement studs D and E travel with the chain C. In the positions shown in Fig. 1 the stud E will
45 begin to travel downwards immediately the handle H is turned and in travelling downwards will draw the slide attachment G¹ down with it, and thus lower the lower section B of the window. During
50 this movement the upper section A remains stationary, because the engagement stud D although it travels with the movement of the chain C, travels horizontally in the slide F and it is not until
55 the stud D arrives beyond the centre of the pinion H², that it will begin to descend and carry with it the attachment F¹, and thus begin to lower the upper section of the window. The continued
60 movement of the chain now carries both the upper section A and the lower section B downwards and when the lower section B arrives at its lowest position, the stud is caused to travel horizontally and to
65 slide in the slide G without further

lowering the lower section. The upper section A however still continues to descend until it contacts with the lower section B. When raising the window the upper section travels upwards first while
70 the stud E operating the lower section B is moved horizontally in the slide G, thus a gap is left between the two sections. Then both the section A and the section B rise together until the section A dis-
75 closes the gap below its lower edge and when the said section A arrives at its uppermost position the engagement stud D travels horizontally in the slide F without tending to raise the upper section
80 any further. During this horizontal travel of the engagement stud D the engagement stud E continues to rise and begins to close the gap by the continued
85 movement of the lower section B in an upward direction until said section B contacts with the lower edge of the upper section A.

In the arrangement illustrated in Figs. 4 and 5 the engagement studs D and E,
90 instead of being carried on a chain, are carried on the ends of two arms J and K. The arm J which carries the stud D is pivoted on the axle H³ and the said stud D engages with the slide F in an attach-
95 ment F¹ connected to the upper section A of the window. The arm J has a stud J¹ which engages with a slot H⁵ in a disc H⁴. The said disc is operated by the driving handle H and may be a pinion
100 disc performing the same function as the pinion H², illustrated in Figs. 1 and 2. The disc H⁴ carries the arm K, the stud E of which slides in the groove G of the attachment G¹, to which the lower section
105 B of the window is connected. There is a spring J² connecting the arm J to the disc H⁴ and tending to draw the stud J¹ to the left-hand end of the slot H⁵. In giving the handle H a left turn the disc
110 H⁴ is turned to the right, causing the arm K, which is connected to the disc H⁴, to move to the right and lower the attachment G¹ and with it the lower section B of the window. During the
115 beginning of this movement the arm J has remained stationary, while its stud J¹ has been passed by the slot H⁵, the said arm J being maintained in the left position by means of the spring J². Until,
120 therefore, the gap between the sections A and B has been completely opened, the arm J remains in its uppermost position and holds the upper section A in the upper or closed position. The continued
125 driving of the handle H now causes both arms J and K to be carried in a downward direction, the arm J following the arm K owing to its stud J¹ having been
130 received in the end of the slot H⁵. The

continued angular movement of the disc H^4 to the right therefore causes both of the arms to travel together with their relative angle opened to the maximum extent. Both the upper and lower sections A and B now travel downwards until the lower section arrives at its lowest position. The arm K then travels beyond the vertical position and slightly raises the lower section. It is brought to rest by the continued lowering of the section A which comes into contact at its lower edge with the upper edge of the lower section B after the latter has risen to a very small extent owing to the passing of the stud E on the arm K beyond the vertical plane containing the axle H^3 , on which the arms J and K are carried. Both of the arrangements illustrated in Figs. 1, 2, 3, 4 and 5 are examples of opening the gap between the sections A and B while both sections are in the enclosing well of the door and of closing the gap between the two after the upper section A has been completely raised.

In the arrangement illustrated in Figs. 6, 7 and 8, the sections A and B are maintained together during the time they are enclosed in the well and are completely raised to close the window and a gap is only opened by a continued movement in the opening direction of the handle H. In this arrangement the arm J is loose on the axle H^3 and carries on its upper end the stud D for operating the upper section A. The arm K, which is fixed to the axle H^3 , has its outer end K^3 pivoted to it at K^4 and is controlled by a pin K^5 sliding in a slot J^3 in the arm J. The engagement stud E is carried on the pivoted extension K^3 and a spring K^6 , which tends to turn the arm J to the left on the axle H^3 tends to keep the arms J and K in similar angular positions on the axle H^3 and with the pin K^5 at the outer end of the slide J^3 , and with the engagement stud E co-axial with the engagement stud D. When the handle H is given a left turn while the window is in the position shown in Fig. 6, both studs D and E are turned in axial alignment with each other about the axle H^3 , moving in their respective slides F and G, and cause the upper and lower sections of the window to descend together remaining in contact with each other all the time. When the window is raised by means of the handle H, both sections rise together to the uppermost position and then by continuing to move the handle H in the same angular direction the upper section A is left in its uppermost position, while the lower section B is lowered. This action is brought about by the arm K continuing to move while it leaves the

arm J in a vertical position and overcomes the resistance of the spring K^6 and in continuing its angular motion it draws down the arm extension K^3 with the stud E, which thus lowers the attachment G^1 and with it the lower section B of the window. On the handle being reversed the lower section is first raised until it contacts with the upper section and then by continuing to turn the handle H both the upper section A and the lower section B may be adjusted simultaneously in the same direction.

The invention above described provides sliding windows for vehicles comprising upper and lower sections, in which the two sections slide vertically in the same stationary side guides and in which both sections are in close proximity when the lower section is at the base of the well and the window completely open, in combination with mechanism operable from within the vehicle and by which both sections may be operated simultaneously, and permit the said sections to separate to open a space below the upper section when the said upper section is in its uppermost position. It also provides windows in which the two sections are operated by a single operating mechanism from within the vehicle, and which provides a lost motion permitting the upper section to come to rest in its uppermost position while the lower section is caused to continue its upward movement to close the gap between the two sections. It further includes sliding windows for vehicles in which a single operating mechanism causes both sections to be raised while in contact with each other, and which then by the continued operation or reversing of the said mechanism permits the lower section to be lowered so as to separate the two sections in such a manner as to open a gap in the lower part of the window opening.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. Sliding windows for vehicles comprising upper and lower sections, in which the two sections slide vertically in the same stationary side guides and in which both sections are in close proximity when the lower section is at the base of the well and the window completely open, in combination with mechanism operable from within the vehicle and by which both sections may be operated simultaneously, and permit the said sections to separate to open a space below the upper section when the said upper section is in its uppermost position.

2. Sliding windows for vehicles as claimed in the preceding Claim, in which the two sections are operated by a single operating mechanism operable from within the vehicle, and which provides a lost motion permitting the upper section to come to rest in its uppermost position while the lower section is caused to continue its upward movement to close the gap between the two sections. 20
3. Sliding windows for vehicles as claimed in Claim 1, in which single operating mechanism causes both sections to be raised while in contact with each other, and which then by the continued operation or reversing of the said mechanism permits the lower section to be lowered so as to separate the two sections in such a manner as to open a gap in the lower part of the window opening. 25
4. Sliding windows for vehicles substantially as described with reference to Figs. 1, 2 and 3 of the accompanying drawings. 25
5. Sliding windows for vehicles substantially as described with reference to Figs. 4 and 5 of the accompanying drawings. 30
6. Sliding windows for vehicles substantially as described with reference to Figs. 6, 7 and 8 of the accompanying drawings. 30

Dated this 5th day of December, 1928.

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Fig. 1.

[This Drawing is a reproduction of the Original on a reduced scale.]

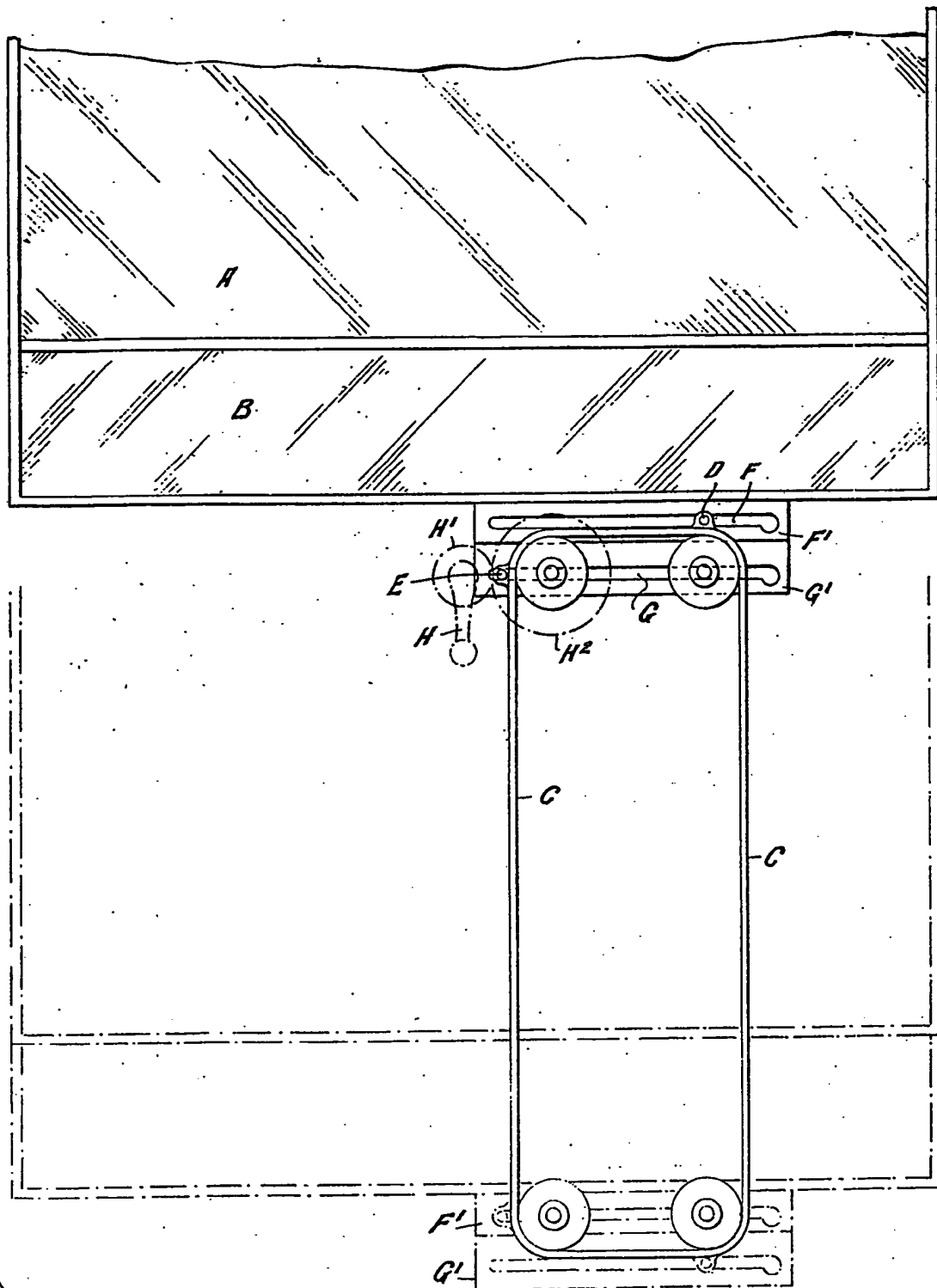


Fig. 2.

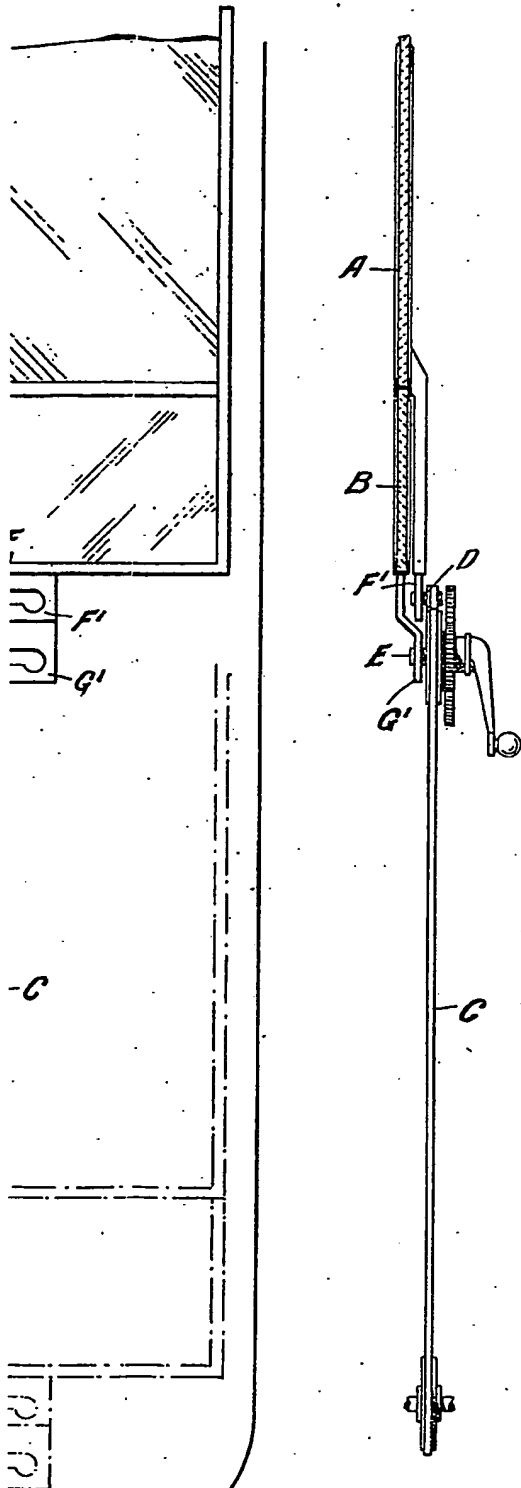


Fig. 3.

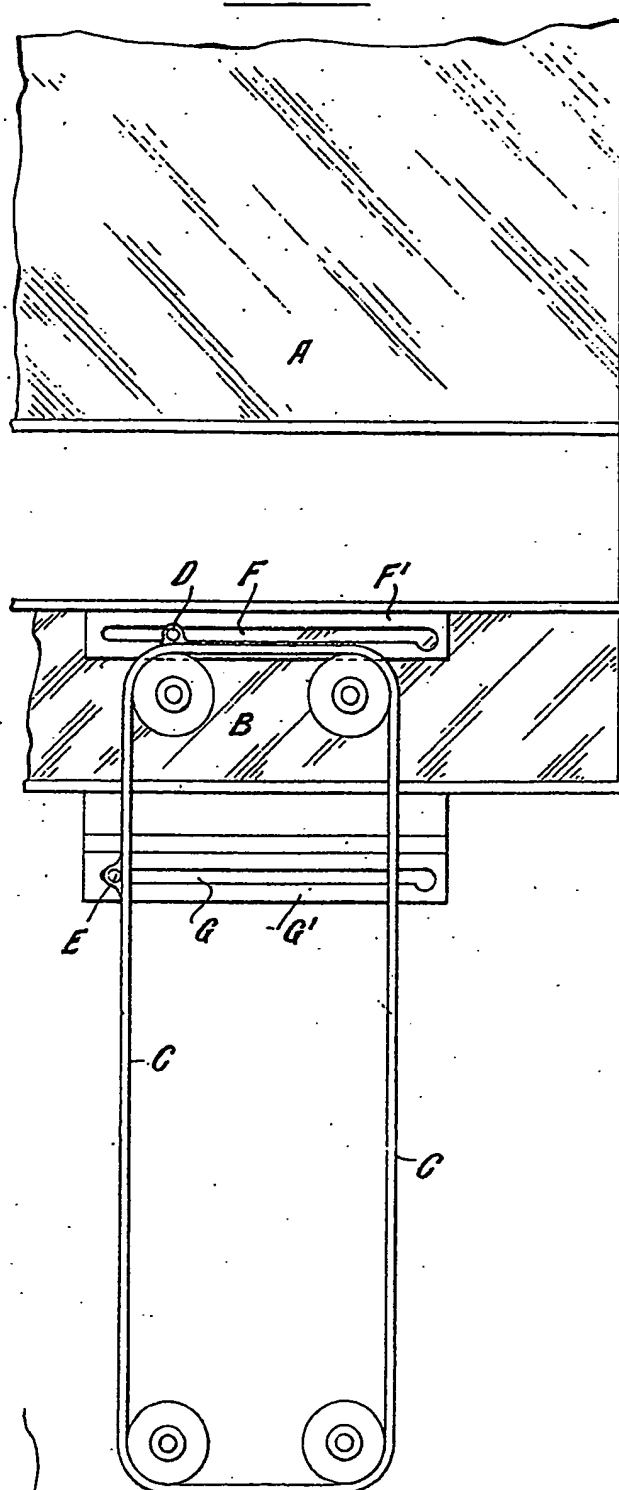


Fig. 1.

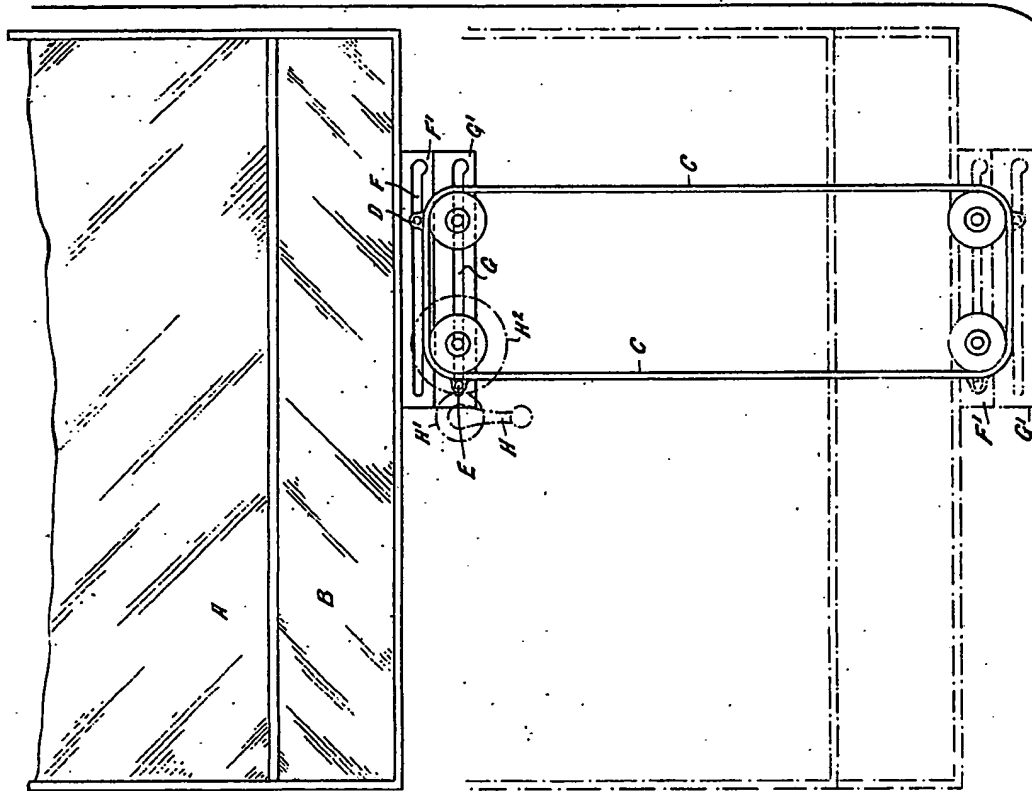


Fig. 2.

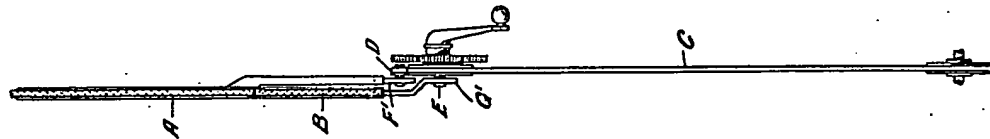
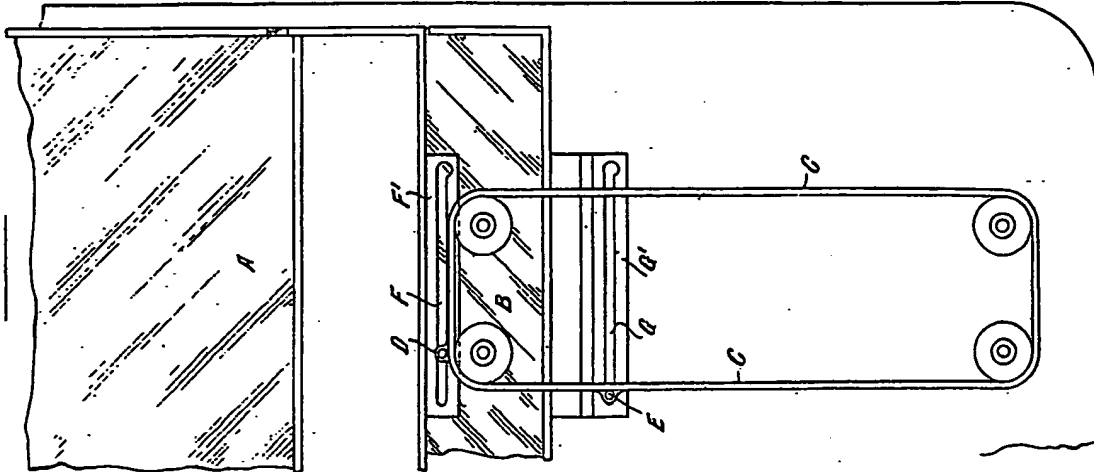


Fig. 3.



[This Drawing is a reproduction of the Original on a reduced scale]

FIG. 4.

[This Drawing is a reproduction of the Original on a reduced scale.]

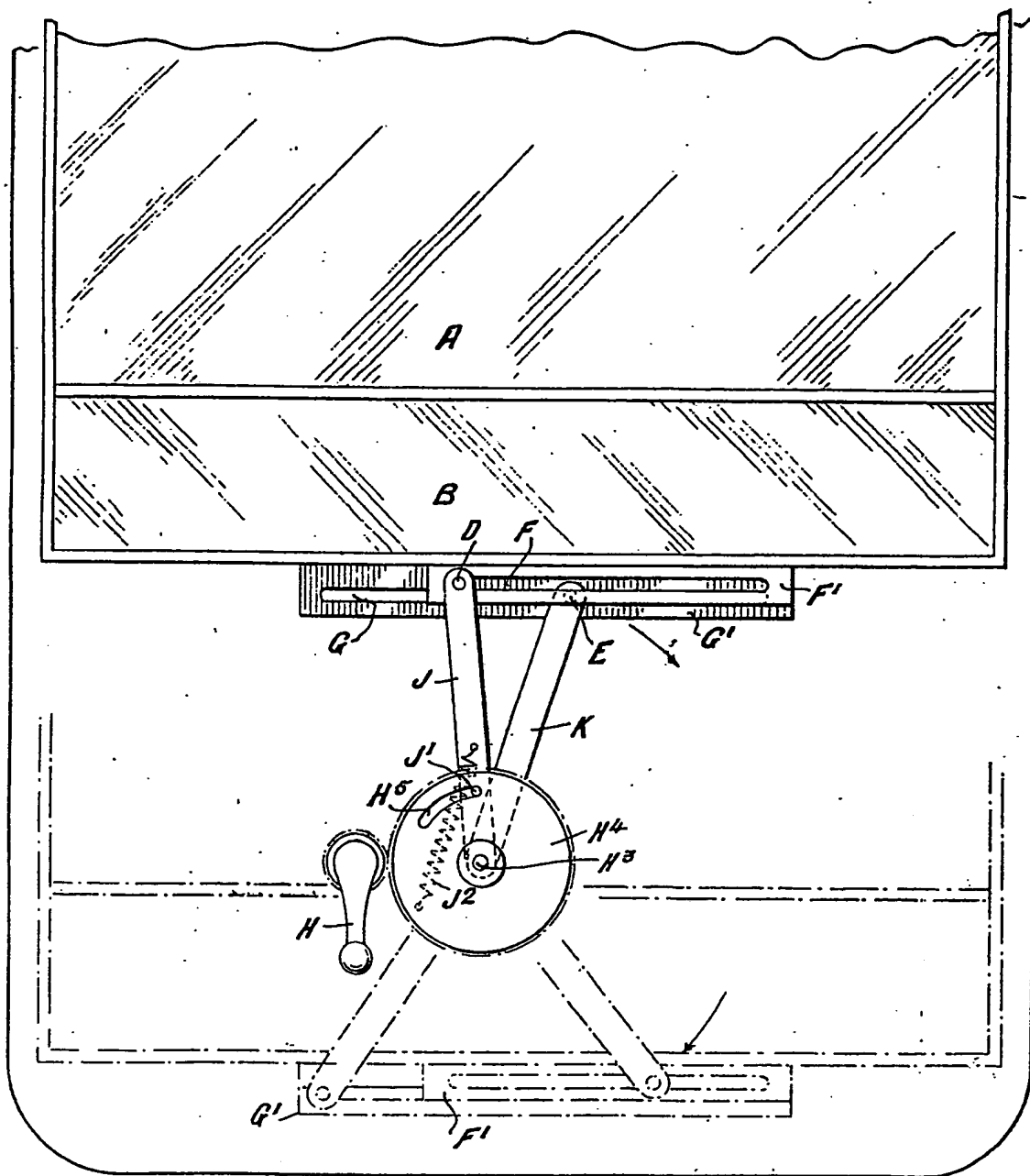


Fig. 5.

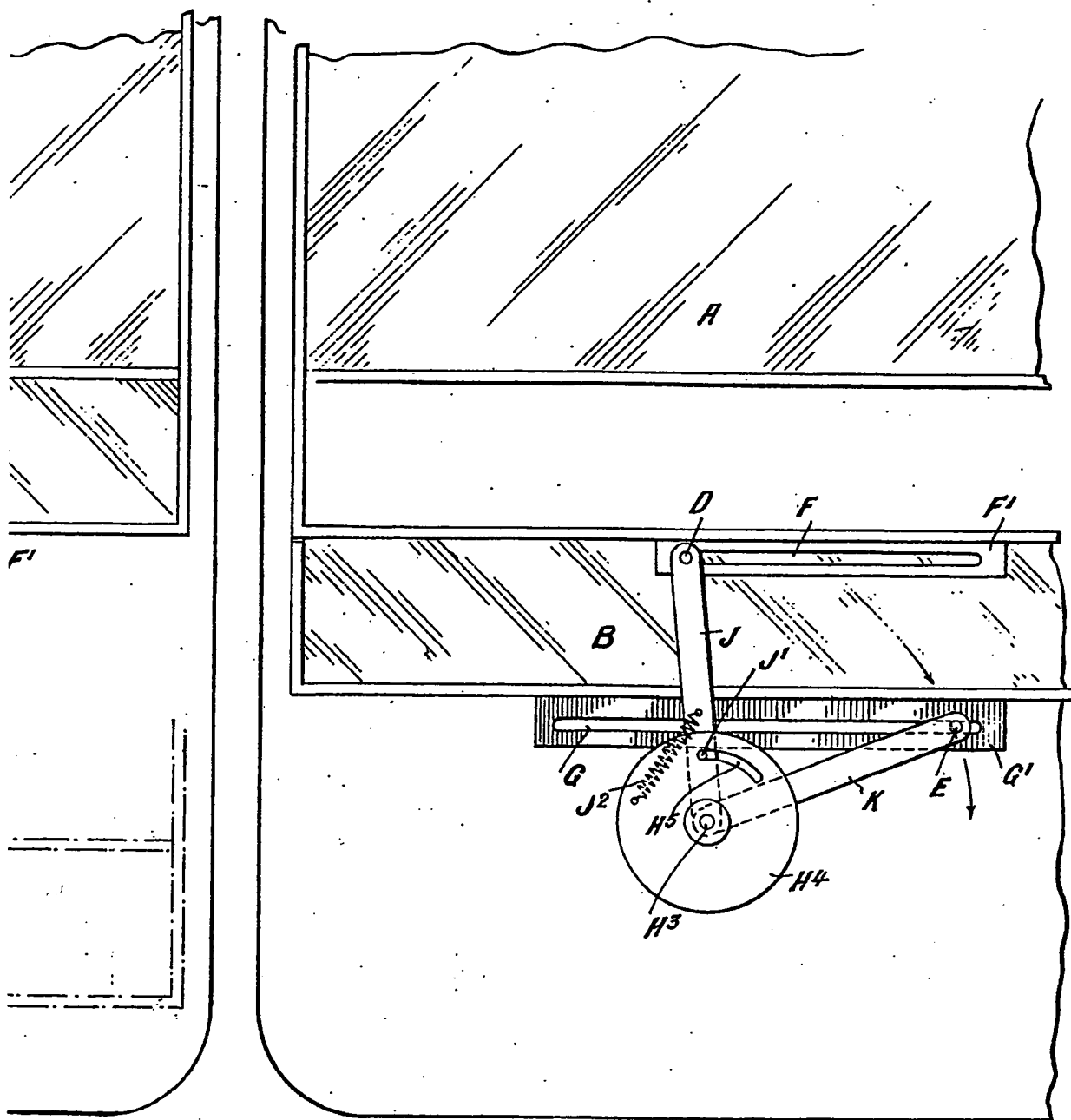


FIG. 4.

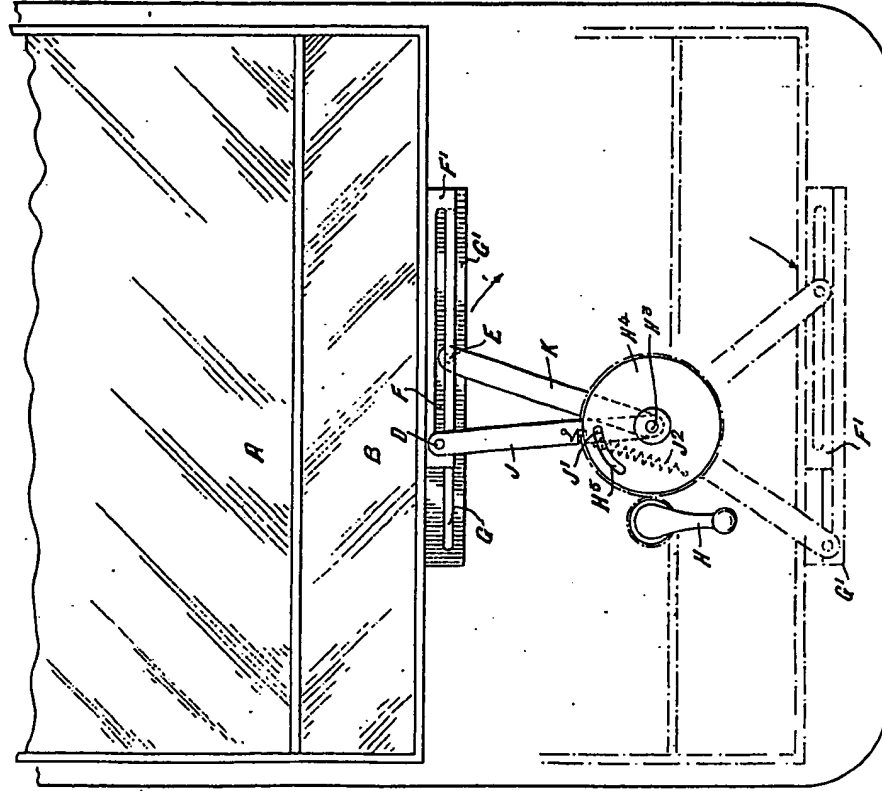
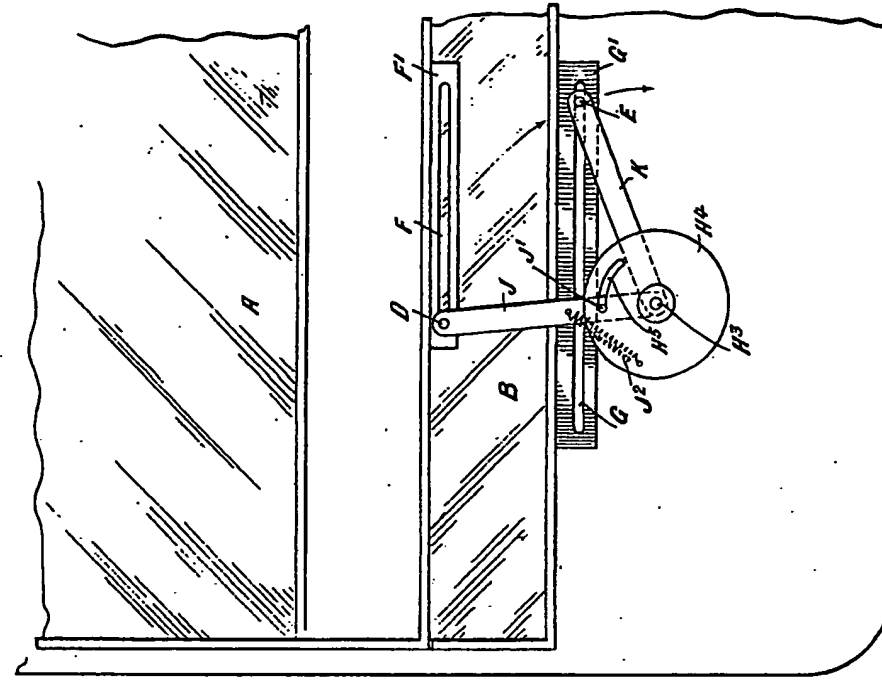


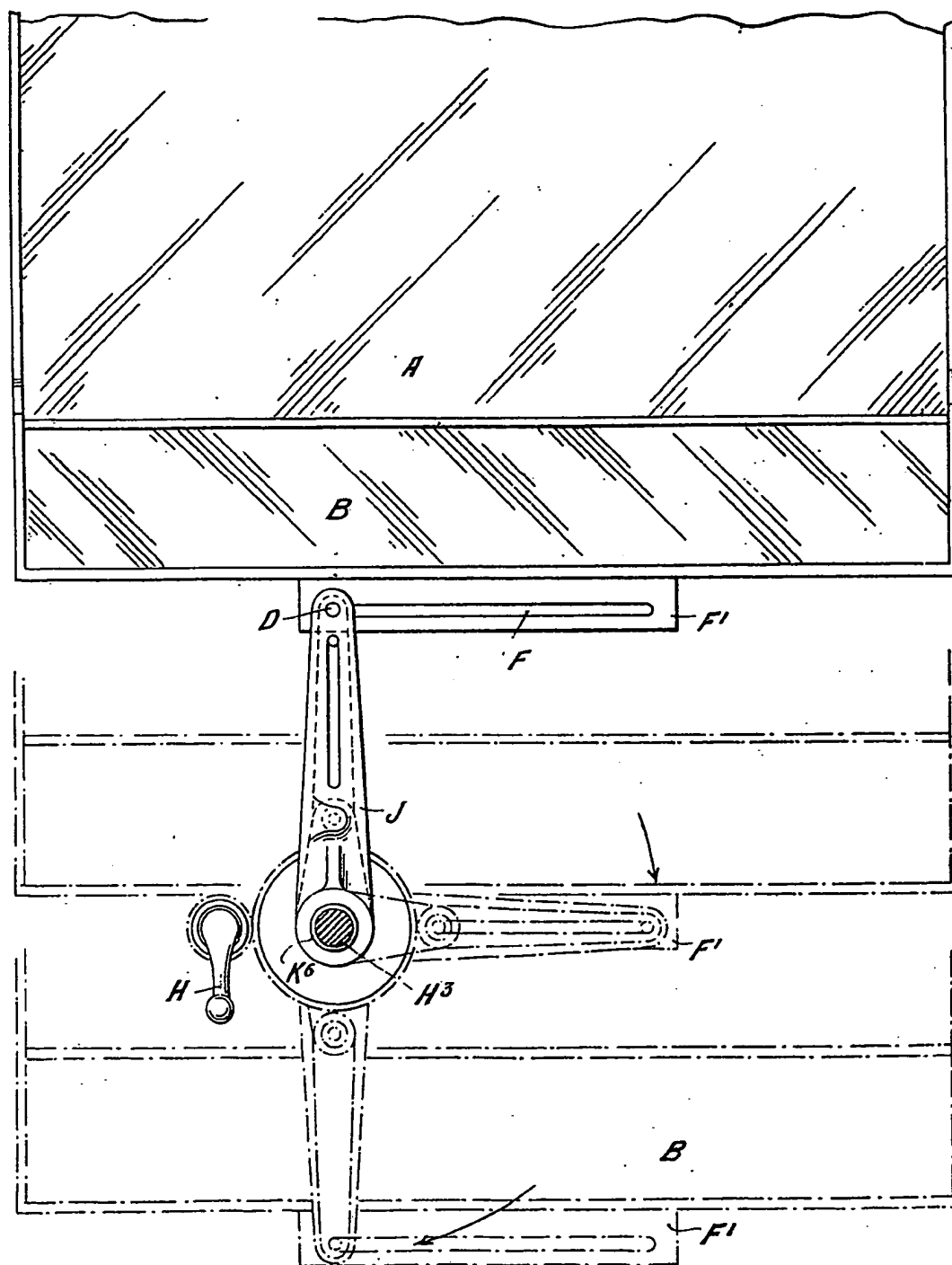
FIG. 5.



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Fig. 6.

[This Drawing is a reproduction of the Original on a reduced scale.]



Fig

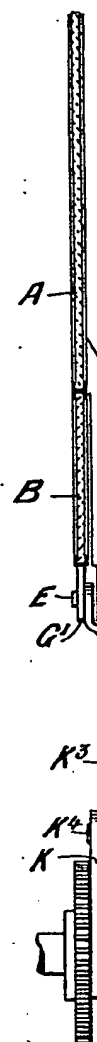


FIG. 8.

FIG. 7.

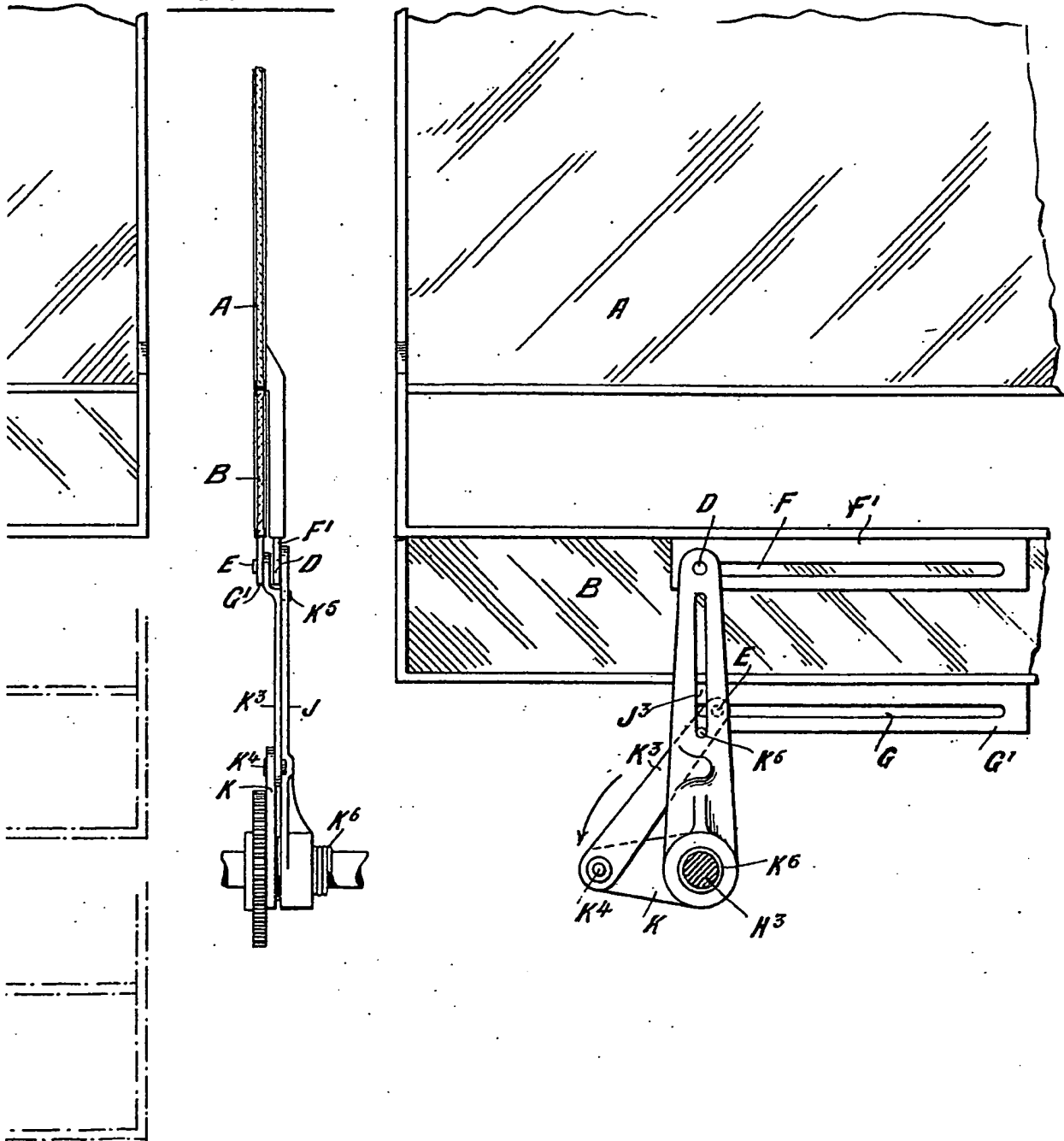


FIG. 6.

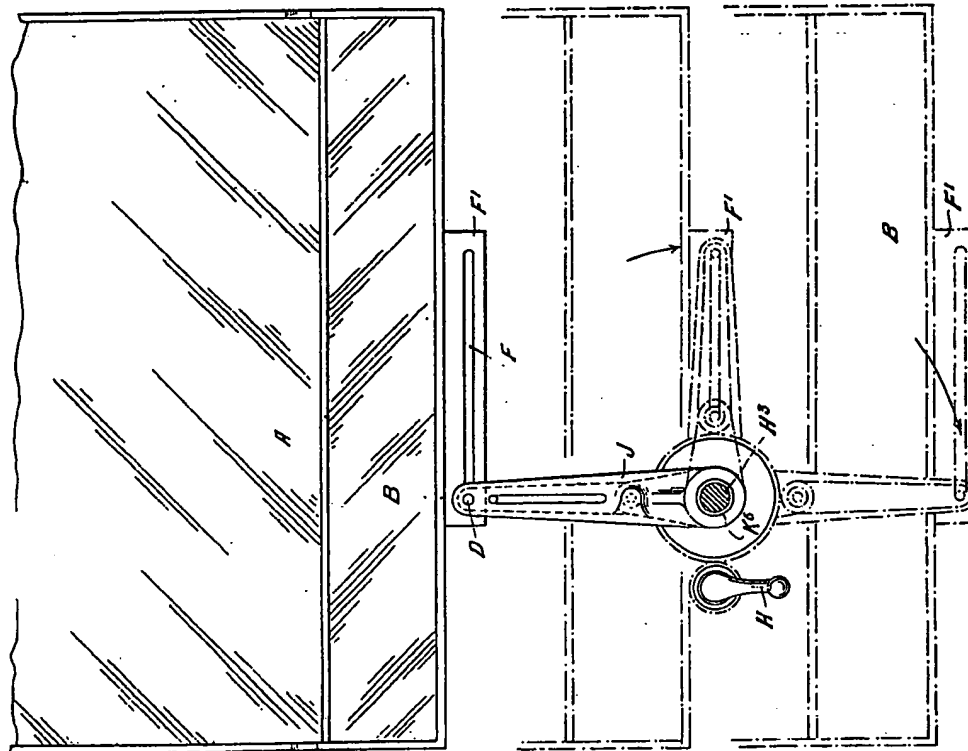


FIG. 7.

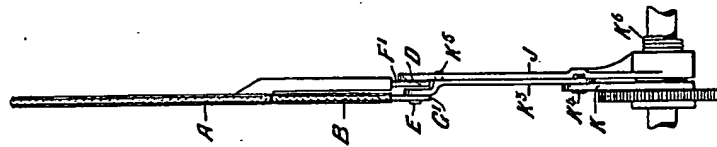
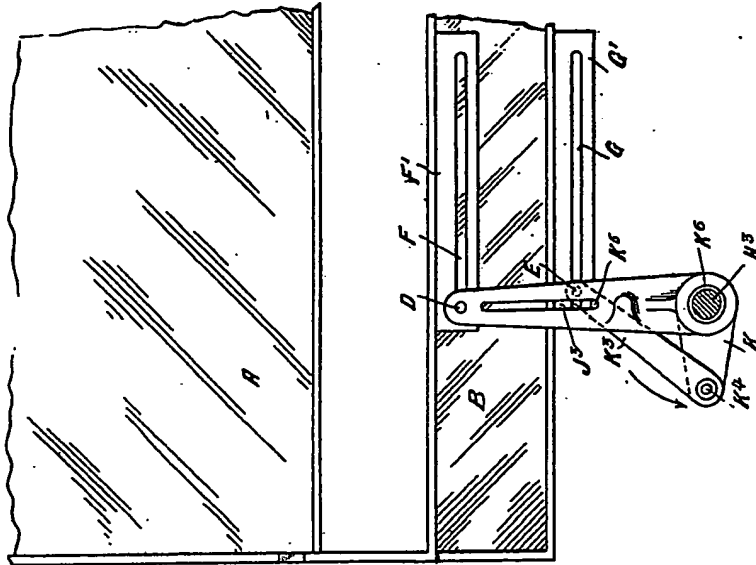


FIG. 8.



[This Drawing is a reproduction of the Original on a reduced scale]